



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

MEMORANDUM

DATE: October 23, 1998

SUBJECT: Review of Analytical Data

FROM: Carl Brickner, Jr., Environmental Scientist
Quality Assurance Program (QAP), PMD-3 *CB Jr.*

THROUGH: Vance S. Fong, P.E., Manager
Quality Assurance Program (QAP), PMD-3 *Vance Fong*

TO: Alisa Wong, Environmental Protection Specialist
Ground Water Office, WTR-9

Attached are comments resulting from review of the following analytical data:

SITE: Duck Valley Water Quality Monitoring
EPA SSI NO.: N/A
CERCLIS ID NO.: N/A
CASE/SAS NO.: R98W14
SDG NOS.: 98177A
LABORATORY: EPA Region 9 Lab, Richmond
ANALYSIS: CLPAS Metals

SAMPLE NO.: Seventeen Water Samples

COLLECTION DATES: June 24, 1998

REVIEWER: Carl Brickner, Jr.
Environmental Scientist
EPA/QAP

If there are any questions, please contact me at (415) 744-1536.

Attachments

cc: Brenda Bettencourt, Laboratory Section, PMD-2

Data Validation Report

Site: Duck Valley Water Quality Monitoring
Case No.: R98W14
Laboratory: EPA Region 9 Lab, Richmond
Reviewer: Carl Brickner, Jr., QAP
Date: October 23, 1998

I. Case Summary

SAMPLE INFORMATION:

Sample Numbers: ORW07, SCW01, ORW02, MCW03, ORW08, ORW011,
ORW03, ORW06, ORW05, ORW04, ORW09, ORW10,
MVW01, MCW02, MCW01, ORW01, and ORW00
Matrix: Water
Analysis: CLPAS Metals
Collection Dates: June 24, 1998
Sample Receipt Dates: June 26, 1998
Analysis Dates: July 9, 10, 13, and 15, 1998
Field Blanks (FB): None
Equipment Blanks (EB): None
Background Sample (BG): None
Field Duplicates (D1): ORW03 and ORW08
(D2): ORW09 and ORW10
(D3): MCW02 and MCW03

ANALYSIS DATES:

<u>Analysis</u>	<u>Analysis Date</u>
ICP	July 9, 1998
Arsenic by GFAA	July 9 and 13, 1998
Lead by GFAA	July 13, 1998
Selenium by GFAA	July 10 and 13, 1998
Thallium by GFAA	July 10, 1998
Mercury by CVAA	July 15, 1998

ATTACHMENTS:

Table 1A: Analytical Results with Qualifications.

Table 1B: Data Qualifiers.

TPO ACTION:

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

SAMPLING ISSUES: None.

OTHER: None.

ADDITIONAL COMMENTS:

The analytical results with qualifications are listed in Table 1A. This report was prepared in accordance with EPA document "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", February 1994.

II. Validation Summary

	<u>Acceptable</u>	<u>Comment</u>
Calibration	[Yes]	[D]
a. Initial Calibration Verification		
b. Continuing Calibration Verification		
c. Calibration Blank		
d. CRDL Standard		
Sample Quantitation	[Yes]	[A]
Laboratory Preparation Blank	[Yes]	[]
Laboratory Control Sample	[Yes]	[]
Matrix Spike Sample	[Yes]	[B]
Laboratory Duplicate Sample	[Yes]	[]
ICP Serial Dilution	[Yes]	[]
ICP Interference Check Sample	[Yes]	[]
GFAA QC	[Yes]	[C]
a. Analytical Spikes		
b. Duplicate Injections		
Sample Preservation and Holding Times	[Yes]	[]
Field QC Samples	[Yes]	[]
a. Field Duplicate Sample		
b. Field/Equipment Blank		

N/A - Not Applicable

III. Validity and Comments

A. The following results are estimated (J) (see Table 1A):

- All results above the instrument detection limit or the method detection limit, but below the quantitation limit (denoted with an "L" qualifier).

Results above the instrument detection limit (IDL) but below the quantitation limit (QL) are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

B. Due to matrix spike recovery outside method QC limits the following results are estimated (J) (see Table 1A):

- Calcium in all samples.

The matrix spike sample analysis provides information about the effect of the sample matrix on the digestion and measurement methodology. The matrix spike recovery results (listed below) for the above analytes did not meet the 75 - 125% criteria for accuracy.

<u>Analyte</u>	<u>Matrix Spike Recovery</u>
Calcium	71%

The calcium results in all samples listed above are estimated (J).

The above sample results may be biased low and false negatives may exist due to sample heterogeneity, poor laboratory technique, or matrix effects.

- C. Due to graphite furnace atomic absorption (GFAA) analytical spike recovery outside method QC limits the following result is estimated (J) (see Table 1A):

- Selenium in sample ORW01.

Selenium was analyzed by the GFAA technique, which requires that a post-digestion analytical spike be performed for each sample to establish the accuracy of the individual analytical determination. The analytical spike recovery result (listed below) for the analyte in the sample listed above did not meet the 85 - 115% criteria for accuracy which evidences an analytical deficiency.

<u>Analyte</u>	<u>Sample</u>	<u>Analytical Spike Recovery</u>
Selenium	ORW01	78%

Selenium had a recovery that was less than 85%. The result reported in the sample listed above may be biased low, and a false negative may exist.

- D. Due to Contract Required Detection Limit standard (CRA) recovery outside QC acceptance limits the following result is estimated non-detect (UJ) (see Table 1A):

- Mercury in sample ORW01.

The Inorganic Statement of Work (SOW) for mercury analysis requires that a CRA be analyzed daily to verify the linearity at the low-end of the calibration curve. The CRA recovery result of 150% for the analysis on 7/15/98 did not fall within the acceptance range of 65 - 135%. In the reviewer's opinion, the result reported in the sample listed above may be biased high, and a false positive may exist.

CLPAS Metals

VALIDATED DATA

Analysis Type:

Concentration in ug/L

Station Location Client Sample I.D.	Lower Owyhee			Sleep Creek			Mtn. City Adm.			Lower Mill			Mill Creek			P. Valley Dam			Mill Creek			
	ORW07	SCW01	AB18530	Val	Com	Result	ORW02	AB18532	Val	Com	MCW03	AB18533	Val	Com	ORW08	AB18534	Val	Com	ORW011	AB18535	Val	Com
Lab Sample I.D.	ORW07	SCW01	AB18530	Val	Com	Result	ORW02	AB18532	Val	Com	MCW03	AB18533	Val	Com	ORW08	AB18534	Val	Com	ORW011	AB18535	Val	Com
Date of Collection	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98
Analyte	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Aluminum	969	4160					705				1320				1020				317			1020
Antimony	32.3	32.3	U				32.3	U			32.3	U			32.3	U			32.3	U		
Arsenic	2.3	2.9	L	J	A		19	L	J	A	14	L	J	A	1.8	L	J	A	2.7	L	J	A
Barium	72.9	73.2	L	J	A		79.0	L	J	A	47.0	L	J	A	70.7	L	J	A	61.7	L	J	A
Beryllium	0.10	0.11	U	J	A		0.10	U			0.10	U			0.10	U			0.10	U		
Cadmium	1.4	1.4	U				1.4	U			1.4	U			1.4	U			1.4	U		
Calcium	24900	14400	J	B			29700	J	B		17900	J	B		26200	J	B		23100	J	B	
Chromium	2.1	2.9	L	J	A		2.1	U			2.3	L	J	A	2.1	U			2.1	U		
Cobalt	3.3	3.3	U				3.3	U			3.3	U			3.3	U			3.3	U		
Copper	6.5	4.7	L	J	A		1.8	U			79.5				25.4	L	J	A	2.8	L	J	A
Iron	851	2730					605				2110				1180				418			1140
Lead	0.90	1.0	L	J	A		0.90	U			0.90	U			0.90	U			0.90	U		
Magnesium	4330	3620	L	J	A		4850	L	J	A	3540	L	J	A	4410	L	J	A	5450	L	J	A
Manganese	48.0	41.0					43.9				86.8				57.4				120			55.3
Mercury	0.10	0.10	U				0.10	U			0.10	U			0.10	U			0.10	U		
Nickel	15.4	15.4	U				15.4	U			15.4	U			15.4	U			15.4	U		
Potassium	1150	2830	L	J	A		1300	L	J	A	612	U			1250	L	J	A	2670	L	J	A
Selenium	0.50	0.50	U				0.50	U			0.50	U			0.50	U			0.50	U		
Silver	3.0	3.0	U				3.0	U			3.0	U			3.0	U			3.0	U		
Sodium	8430	8460					8590				4400	L	J	A	7160				15200			7240
Thallium	14	14	U				14	U			14	U			14	U			14	U		
Vanadium	2.0	7.5	L	J	A		2.1	L	J	A	4.2	L	J	A	2.8	L	J	A	2.0	L	J	A
Zinc	49	99	L	J	A		42	L	J	A	383				185	L	J	A	16	L	J	A

Val-Validity Refer to Data Qualifiers in Table 1B:

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

OL-Quantitation Limit.

D1, D2, etc.-Field Duplicate Pairs:

FB-Field Blank. EB-Equipment Blank. TB-Trip Blank. BG-Background Sample.

N/A-Not Applicable.

N/R-Not Required.

VALIDATED DATA

Concentration in ug/L

Station Location		China Dam		Mtn. City		Golden Ensign		Res. Border		D2		Res. Border		D2		Mtn. View		Lower Mill		D3				
Client Sample I.D.	ORW06	ORW05	ORW04	ORW09	ORW10	ORW00	ORW01	ORW02	ORW03	ORW04	ORW05	ORW06	ORW07	ORW08	ORW09	ORW10	ORW00	ORW01	ORW02					
Lab Sample I.D.	AB18537	AB18538	AB18539	AB18540	AB18541	AB18542	AB18543	AB18544	AB18545	AB18546	AB18547	AB18548	AB18549	AB18550	AB18551	AB18552	AB18553	AB18554	AB18555					
Date of Collection	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98	06/24/98					
Analyte	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com			
Aluminum	1210			991			1060			851			1010			882	L	J	A	1200				
Antimony	32.3	U		32.3	U		32.3	U		32.3	U		32.3	U		32.3	U		32.3	U				
Arsenic	2.5	L	J	A	2.5	L	J	A	1.4	L	J	A	2.0	L	J	A	1.4	L	J	A	1.3	U		
Barium	74.5	L	J	A	75.3	L	J	A	73.6	L	J	A	75.5	L	J	A	65.1	L	J	A	44.6	L		
Beryllium	0.10	U		0.10	U		0.10	U		0.10	U		0.10	U		0.10	U		0.10	U				
Cadmium	1.4	U		1.5	L	J	A	1.4	U	1.4	U		1.4	U		1.4	U		1.4	U				
Calcium	22900		J	B	25200		J	B	25300		J	B	25500		J	B	20700		J	B	16500			
Chromium	2.1	U		2.1	U		2.1	U		2.1	U		2.1	U		2.1	U		2.2	L	J	A		
Cobalt	3.3	U		3.3	U		3.3	U		3.3	U		3.3	U		3.3	U		3.3	U				
Copper	8.7	L	J	A	8.7	L	J	A	7.8	L	J	A	6.8	L	J	A	1.8	U		76.0				
Iron	1090			874			950			829			896			52.1	L	J	A	1960				
Lead	0.90	U		0.90	U		0.90	U		0.90	U		0.90	U		0.90	U		0.90	U				
Magnesium	4190	L	J	A	4440	L	J	A	4360	L	J	A	4380	L	J	A	7590			3390	L	J	A	
Manganese	48.8			45.1			45.9			44.1			44.6			20.0			80.8					
Mercury	0.10	U		0.10	U		0.10	U		0.10	U		0.10	U		0.10	U		0.10	U				
Nickel	15.4	U		15.4	U		15.4	U		15.4	U		15.4	U		15.4	U		15.4	U				
Potassium	1600	L	J	A	1510	L	J	A	1490	L	J	A	1580	L	J	A	2960	L	J	A	612	U		
Selenium	0.50	L	J	A	0.73	L	J	A	0.66	L	J	A	0.50	U		0.50	U		0.50	U				
Silver	3.0	U		3.0	U		3.0	U		3.0	U		3.0	U		3.0	U		3.0	U				
Sodium	8120			8080			7910			8200			8030			14200			4140	L	J	A		
Thallium	1.4	U		1.4	U		1.4	U		1.4	U		1.4	U		1.4	U		1.4	U				
Vanadium	3.3	L	J	A	3.3	L	J	A	2.1	L	J	A	2.7	L	J	A	1.6	L	J	A	3.2	L	J	A
Zinc	82	U	J	A	58	U	J	A	61	L	J	A	55	L	J	A	1.6	U		38.8				

Val-Validity Refer to Data Qualifiers in Table 1B.
Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable.

TABLE 1B
DATA QUALIFIERS

NO QUALIFIERS indicate that the data are acceptable both qualitatively and quantitatively.

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

- L Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.